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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/863,652	05/22/2001	Eng-Chew Cheah	9818-050-999	1049
48591	7590	08/15/2006	EXAMINER	
MORGAN, LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE WASHINGTON, DC 20004			ZARNEKE, DAVID A	
			ART UNIT	PAPER NUMBER
			2891	

DATE MAILED: 08/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/863,652		CHEAH, ENG-CHEW	
	Examiner		Art Unit	
	David A. Zarneke		2891	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Reopen Prosecution/Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Consequently, the prosecution of this application is opened.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

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under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki et al., US Patent 4,903,114, in view of Gainey et al., US Patent 6,313,519, and Tanaka et al., US Patent 6,265,762.

Aoki (figure 7) teaches a semiconductor package, comprising:

an intermediate lead finger mounting substrate (11) having a first surface and a second surface;

a semiconductor die (51) with a bond pad (511), the semiconductor die being attached on the first surface of the intermediate lead finger mounting substrate;

a package lead (5);

a bond wire (18 & 19) comprising a first end portion coupled to the package lead, a second end portion coupled to the bond pad, and an intermediate portion (figure 7);

an intermediate lead finger (raised portion of 11) mounted on the first surface of the intermediate lead finger mounting substrate, wherein the intermediate lead finger is positioned between the package lead and the bond pad, and wherein the intermediate lead finger is attached to the intermediate portion of the bond wire, and remains so attached through a subsequent molding process (2, 25+).

Aoki fails to teach the use of one bond wire.

Gainey teaches a structure having an intermediate lead finger and one continuous bond wire (figure 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the one bond wire of Gainey in the invention of Aoki because it would be easier and less expensive to contact one wire as opposed to dealing with two separate wires.

Both Aoki and Gainey fail to teach a heat sink coupled to the second surface of the intermediate lead finger mounting substrate; and a mold compound that encloses the semiconductor die, a portion of the package lead, the bond wire, the intermediate lead finger, and the heat sink.

Tanaka (figure 9) teaches a leadframe with heat sink [8] coupled to the second surface of the intermediate lead fingers [15]; and a mold compound [14] that encloses the semiconductor die [10], a portion of the package lead [4], the bond wire [13], the intermediate lead finger [15], and the heat sink [8]. While Tanaka fails to teach an intermediate lead finger substrate, Tanaka is relied upon to teach the use of a heat sink along with intermediate lead fingers. When the concept of a heat sink used in Tanaka is combined with Aoki, the result is a heat sink coupled to the second surface of the intermediate lead finger substrate.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the heat sink and encapsulation of Tanaka in the combined invention of Aoki and Gainey because Tanaka teaches that heat sinks improve the heat radiation performance of a device (1, 43+).

Regarding claim 10, Aoki teaches the intermediate lead finger and the intermediate lead finger mounting substrate are formed of a non-conducting material (3, 53+).

With respect to claim 11, Aoki teaches the intermediate lead finger comprises a non- conducting portion for attaching to the intermediate portion of the bond wire (3, 53+).

As to claim 12, while Aoki, Gainey and Tanaka fail to teach the use of a programmable logic device as the semiconductor die, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a programmable logic device as the semiconductor die because programmable logic devices are conventionally known in the art semiconductor die useable in package presently claimed. The use of conventional materials to perform there known functions in a conventional process is obvious (*In re Aller* 220 F.2d 454,456,105 USPQ 233,235 (CCPA 1955)).


In re claim 13, Aoki teaches the semiconductor die is mounted on a center portion of the first surface of the intermediate lead finger mounting substrate, and wherein the intermediate lead finger is mounted on a peripheral portion of the first surface of the intermediate lead finger mounting substrate (figure 7).

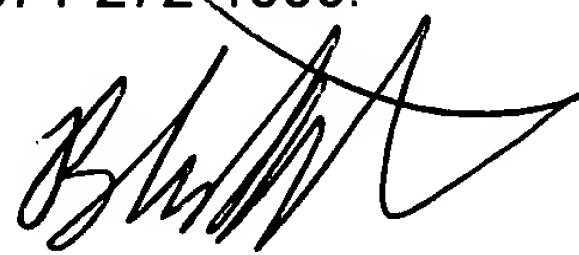
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Zarneke whose telephone number is (571)-272-1937. The examiner can normally be reached on M-Th 7:30 AM-6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Baumeister can be reached on (571)-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


David A. Zarneke
Primary Examiner
August 6, 2006


B. WILLIAM BAUMEISTER
SUPERVISORY PATENT EXAMINER